

A new species of the genus *Aristolebia* Bates from Thailand, with notes on some Papuan and Australian species

(Insecta, Coleoptera, Carabidae, Lebiinae)

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Aristolebia crucigera, spec. nov. is described from northern Thailand. From all other species except for the New Guinean *A. capitis* Darlington the new species is distinguished at the first glance by the cruciate elytral pattern. From the latter species it differs by its narrower pronotum, angulate sutural angle of elytra, and presence of 7 teeth on the tarsal claws.

Examination of the type of the Australian cyclosomine species *Sarothrocrepis mucronata* Sloane reveals that this species actually belongs in the genus *Aristolebia* of Lebiinae and is conspecific with *A. papua* Darlington from New Guinea. As a consequence, the latter name becomes a younger synonym of *A. mucronata* (Sloane).

Additional records of Australian and New Guinean species of *Aristolebia* are dealt with.

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Introduction

In the material collected by H. Malicky and co-workers at different localities in northern Thailand by means of regular sampling at light, few specimens of an undescribed species of the lebiine genus *Aristolebia* Bates were detected that proved to belong to a new species which is described in the present paper.

The six recorded species of the characteristically shaped lebiine genus *Aristolebia* Bates are distributed from southern India to China and the Philippines, and also from New Guinea to northern Australia (North Queensland) (Csiki 1932, Jedlicka 1963, Darlington 1968, Moore et al. 1987, Lorenz 1998). According to Darlington (1968) one species also occurs on or near Sulawesi. Main differentiating characters of the genus are the angulate external angle of the elytra, the concave excision of the elytral apex, the semicircular pronotum, and presence of two preapical excisions at the inner surface of the meso-

tibia in males. In many other characters, *Aristolebia* is rather similar to the large genus *Lebia sensu lato* with which *Aristolebia* certainly is closely related.

During a recent visit to certain Australian insect collections material of Australian and New Guinean species of *Aristolebia* was examined and the type of a species of *Aristolebia* was identified that was so far wrongly included in another genus and even another subfamily.

Methods

For the taxonomic treatment standard methods are used. The male genitalia were removed from specimens soaked for a night in a jar under wet atmosphere, then cleaned for a short while in hot KOH.

The habitus photograph was obtained by a digital camera using SPOT Advanced for Windows 3.5 and subsequently were worked with Corel Photo Paint 10.

Measurements were taken using a stereo microscope with an ocular micrometer. Length has been meas-

Aristolebia crucigera, spec. nov.

Figs 1, 2



Fig. 1. *Aristolebia crucigera*, spec. nov. Habitus. Length: 5.7 mm.

ured from apex of labrum to apex of elytra. Lengths, therefore, may slightly differ from those of other authors. Length of pronotum was measured from the most advanced part of base to the most advanced part of apex; Length of elytra was taken from the most advanced part of humerus to the most advanced apex of elytra including apical denticles or spines. Ratios are somewhat variable in most species, but generally they offer rather good measures of relative shape.

The types of the new species are preserved in Zoologische Staatssammlung, München (ZSM) and in the working collection of the author (CBM) in ZSM. Other material is from Australian National Insect Collection, Canberra (ANIC), B. P. Bishop Museum, Honolulu (BMH), Museum of Comparative Zoology, Cambridge, Mass. (MCZ), Queensland Museum, Brisbane (QMB), and South Australian Museum, Adelaide (SAMA).

Types. Holotype: ♂, Thailand, Doi Inthanon, 17.-24.5.1990, leg. Malicky (ZSM). – Paratypes: 1♂, Thailand, Doi Inthanon, 5.-12.2.1991, leg. Malicky (CBM); 1♀, Thailand, Chiang Mai Zoo, 16.-23.11.1989, leg. Malicky (ZSM).

Differential diagnosis. Rather small species (in genus), distinguished at the first glance by the cruciate elytral pattern that leaves the apex of elytra light, but has the black central macula united with the black lateral stripe. Apart from colour pattern, this species is distinguished from the three Oriental species *A. davaonis* Heller, *A. prattiana* Bates, *A. quadridentata* Bates, and the New Guinean and North Australian *A. mucronata* (Sloane) (formerly *A. papua* Darlington – see note below) by its much lesser size. From the similarly sized New Guinean *A. wau* Darlington it is distinguished by the vividly patterned elytra, and from the most similarly coloured New Guinean *A. capitis* Darlington it is distinguished by relatively narrower pronotum, angulate instead of rounded sutural angle of elytra, and presence of 7 instead of 5 teeth on the tarsal claws.

Description

Measurements. Length: 5.7-7.4 mm; width: 2.5-3.3 mm. Ratios. Width/length of pronotum: 1.45-1.54; width of head/width of pronotum: 0.74-0.84; length/width of elytra: 1.52; width of elytra/width of pronotum 1.61-1.78.

Colour (Fig. 1). Head including mouth parts, and pronotum reddish, margins of pronotum slightly lighter, head between posterior half of eyes with a dark reddish or light brownish transverse stripe. Elytra yellow with a piceous or in parts even blackish cruciate pattern as depicted in fig. 1 that leaves the lateral margin narrowly and the apex very widely yellow.

Head. Of moderate size. Eyes very large, semi-circular, laterally remarkably protruding. Labrum anteriorly slightly convex, 6-setose. Mentum with shallow, apically slightly bifid tooth. Glossa elongate, polysetose at apex, paraglossae wide, foliaceous, as long as glossa and fused to it, densely setose at margin. Galea with wide, rather depressed last segment that is extremely densely pilose. Lacinia large, with very elongate terminal hook and rather dense row of teeth at inner margin. Palpi of normal size, very sparsely pilose. Mentum asetose, but submentum with a very elongate seta at either side. Mandible short and wide, evenly curved. Antenna fairly elongate, surpassing base of pronotum by almost three antennomeres, pilose from 4th antennomere. Labrum and clypeus with fine and sparse

punctures, frons and neck with coarse and rather rugose puncturation. Microreticulation isodiametric, though superficial, therefore surface glossy.

Pronotum. Moderately wide, though rather variable. Anteriorly about semicircular, widest about at middle, but little narrowed towards base, thus, base by far wider than apex. Apex almost straight, apical angles widely rounded, lateral margin convex throughout, basal angle about right, though slightly obtuse at tip, base in middle convex, produced. Apex narrowly margined, base in middle not or very feebly margined. Apical transverse sulcus and median line shallow, basal transverse sulcus deeply impressed. Lateral margin anteriorly narrow, widened and explanate towards base. Disk gently convex. Anterior lateral seta situated about at anterior third, slightly removed from margin, posterior seta at basal angle. Surface of disk with very irregular, rugose sulci, rather coriaceous, also with scattered punctures, and with distinct, isodiametric microreticulation, moderately glossy.

Elytra. Rather elongate, gently widened towards apex, widest about at apical third. Humeri evenly rounded, lateral margin faintly bisinuate at basal third, then gently convex. External apical angle angulate, forming a short, acute denticle. Sutural angle with very short denticle, apex gently oblique, straight, only near external angles slightly excised. Striae complete, well impressed, not or very feebly crenulate. Intervals convex. 3rd interval with two fixed setae, both situated at external margin of interval, the anterior one at about basal third, the posterior one behind apical fourth. Intervals impunctate, though with almost isodiametric, somewhat superficial microreticulation, rather glossy. Posterior wings fully developed.

Lower surface. With very sparse pilosity. Metepisternum very elongate, $>2.5\times$ longer than wide. Terminal sternite in male quadrisetose, in female six-setose, in both sexes with fairly dense and rather elongate additional pilosity.

Legs. Of average size. 4th tarsomeres of all legs widened, deeply ($>$ half of tarsomere) excised, in both sexes with dense tarsal brush. 5th tarsomere with two rows of several setae on lower margin. Claws with 7 elongate teeth.

Male genitalia (Fig. 2). Both, aedeagus including parameres, and genital ring very heavily sclerotized. Genital ring very large, almost twice the length of the aedeagus, narrow, gently convex, symmetric, with shoehorn-shaped, symmetric apex that is remarkably curved inwards. Aedeagus moderately elongate, compact, orificium rather short, gently turned to left. Lower surface gently bisinuate, apex short, obtuse, straight. Internal sac with very heavily sclerotized, slightly twisted plate in middle, oth-

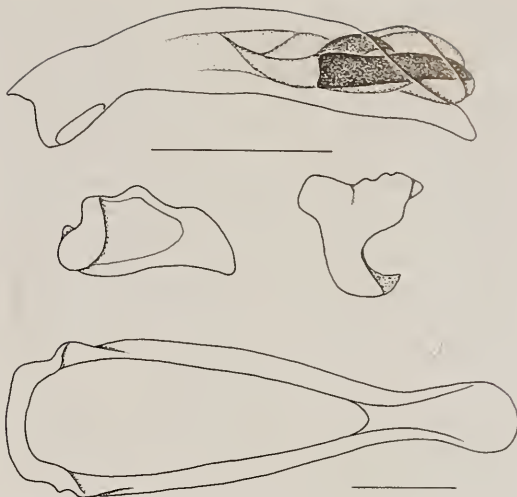


Fig. 2. *Aristolebia crucigera*, spec. nov. Male genitalia: aedeagus, parameres, and genital ring. Scales: 0.5 mm.

erwise with rather simple folding. Parameres very dissimilar, rather wide, asetose.

Female genitalia. Very similar to those of the genus *Lebia*. Stylocere 1 without apical setae, stylocere 2 very short, apically widely rounded, but with an extremely short, obtuse, almost punctiform apical seta.

Variation. Apart from larger size and considerably wider pronotum of the single female, little variation noted.

Distribution. Northern Thailand.

Collecting circumstances. All specimens captured at light in February, May, and November. Habits unknown, though this may be rather an arboricolous species.

Etymology. The name refers to the cruciate elytral pattern.

Remarks. With respect to colour pattern and the deeply excised 4th tarsomeres this species is most similar to the New Guinean *Aristolebia capitis* Darlington. This may or may not be evidence of close relationship which is uncertain as long as no examination of the phylogenetic relationships of the genus as a whole has been attempted.

Aristolebia papua Darlington

Darlington (1968: 84) described *Aristolebia papua* from New Guinea. Recent examinations of material from Australian National Insect Collection, Canberra

(ANIC), Queensland Museum, Brisbane (QMB), and South Australian Museum, Adelaide (SAMA) reveal that this species occurs also in northern Australia (see records below). During my examinations of the types of the Australian species of the genus *Sarothrocrepis* Chaudoir of the masoreine tribe Cyclosomini in ANIC I recognized that the type of *Sarothrocrepis mucronata* Sloane undoubtedly belongs to the genus *Aristolebia* and is conspecific with *A. papua* Darlington.

Surprisingly enough, Sloane himself noted on the label of the holotype "*Aristolebia*" with "*Sarothrocrepis*" only in brackets, but finally he described the species as *Sarothrocrepis*. It is likewise surprising why P. J. Darlington when fixing the status of the specimen as holotype, and B. P. Moore when again examining the type specimen for his catalogue of the Carabidae of Australia (Moore et al. 1987) did not recognize the obviously wrong generic affiliation and further on included the species in *Sarothrocrepis*.

As a consequence of this examination, *Sarothrocrepis mucronata* Sloane is moved to the genus *Aristolebia*, and the name *Aristolebia papua* Darlington becomes a younger synonym of *Aristolebia mucronata* (Sloane) and must be replaced by the former name.

Sarothrocrepis mucronata Sloane, 1907: 374; Moore et al. 1987: 280; Lorenz 1998: 428.

Aristolebia papua Darlington, 1968: 84; Lorenz 1998: 455 (new synonymy).

Types. Of *mucronata*: Holotype: ♀, Townsville, Qld. May 03 F. P. Dodd / *Aristolebia* (*Sarothrocrepis*) *mucronata* Sl. Type (Sloane's hand!)/HOLOTYPE *Sarothrocrepis mucronata* Sl. PJD (ANIC).

Of *papua*: Holotype: ♂, Wau, Morobe Distr. 1200-1300 m, May 7, 1963, J. Sedlacek (BMH). – Paratypes: 17, of same locality, but with slightly different dates (BMH, MCZ) (not examined).

Additional material from Australia. QLD: 1♂, Magnetic I., A. M. Lea (SAMA); 3♂♂, 7♀♀, Nelly Bay, Magnetic Is. NQ. Dez. 97, Jan. 98, S. Feam. (CBM, QMB); 1♂, Bamaga, xii.1983, J. Sedlacek (CBM). – NT: 1♀, 12.26S 130.56E Holmes Jungle, Berrimah, 10 km S. of Darwin, 8.xi.72, at light, E. Britton (ANIC); 2♂♂, 12.25S, 132.58E, 1 km N. of Cahills Crossing, (East Alligator River), 8.xi.72, M. S. Upton (ANIC, CBM); 1♀, 12.21S, 130.42E, Casuarina Beach, 10 km NNE of Darwin, 7.xi.72, E. Britton (ANIC).

Collecting circumstances. One specimens was collected in "rainforest, behind beach, at light", the specimens from Magnetic Island at "Black Light".

Distribution. Apart from its occurrence in New Guinea, this species apparently is distributed through

the whole of tropical northern Australia from northern Queensland to at least northern parts of Northern Territory. It is to be examined whether it even ranges into far northwestern Australia and thus actually occupies the whole tropical belt of Australia.

Note. Darlington already noted that one of his specimens from New Guinea does not possess the conspicuous cruciate elytral pattern of the type series from Wau, but has almost unicolourous dark elytra. Of the 17 Australian specimens I have seen, five (including four from Magnetic Island close to the type locality of *A. mucronata*!) show the vividly coloured elytral pattern of the holotype of *A. papua*, whereas the others, including the holotype of *A. mucronata*, but also 7 specimens from Magnetic Island, have almost wholly dark elytra with very inconspicuously lighter humeral and apical spots. In all other respects, however, they are similar to the vividly patterned specimens and undoubtedly belong to the same species which is also demonstrated by the common occurrence of unicolourous and patterned specimens at the same locality.

Incidentally, the four patterned specimens from Magnetic Islands are males, whereas all 7 uniform black ones are females. It would be worth examining with larger samples, whether this composition is accidental, whether it is sexual, and whether this sexual difference, if it is one at all, applies at other localities.

Aristolebia wau Darlington

Darlington, 1968: 84; Moore et al. 1987: 309, Lorenz 1998: 455.

Distribution. This small, unicolourous, light brown species is easily identified. It ranges from eastern New Guinea to northern Queensland and was already noted by Darlington (1968) from the tip of Cape York Peninsula. Moore et al. (1987) recorded the species from Cape York Peninsula down to Cape Tribulation, but I have seen specimens from as far south as Townsville. In the material at hand (26 ex.) no notes about collecting circumstances are given, but I guess that this is a tree-living species that lives in more or less closed forests.

Note. Although the species was mentioned as unicolourous light brownish (Darlington 1968), I saw a New Guinean specimen bearing humeral and apical spots like *A. capitis* Darlington and *A. crucigera*, spec. nov. which spots, however, are much less conspicuous than in both mentioned species. Comparison of the male genitalia of the patterned spec-

imen with those of unicolourous specimens of *A. wau* did not reveal any difference. Thus, this may represent a rare colour variant.

Aristolebia capitis Darlington

Darlington, 1968: 85; Lorenz 1998: 455.

This vividly coloured species was described from the western part of Vogelkop Peninsula, westernmost New Guinea. Few recently collected specimens from Batanta Island off the west coast of New Guinea differ from the type specimens by the almost completely dark colour of their elytra that only have a small and fairly inconspicuous semilunar preapical spot but no distinct humeral stripe which area is only very inconspicuously lighter. In all other respects they exactly match the types of *A. capitis* and undoubtedly belong to this species.

Additional material. 3♀, W-PAPUA, Raja Ampat Pr. Waywesar/Batanta bor. 0°45'26"S, 130°46'55"E, 13.I. 2004, leg. A. Weigel (CBM, CWP).

Distribution. This species apparently is restricted to the westernmost part of New Guinea, Vogelkop Peninsula and adjacent islands, but is to be examined, whether it also occurs on the other neighbouring islands (namely Salawati and Waigeo).

Remarks

Certainly the genus *Aristolebia* is sufficiently distinct from the large genus *Lebia sensu lato* to be maintained as a separate genus, even when some *Lebia*'s from the same region likewise have excised apical margins and angulate apical angles of their elytra. It has been recognized that colour and pattern, in particular that of the elytra, vary remarkably in several species. Such variation is also found in certain *Lebia* species, but the presence of black, almost unpatterned specimens is especially common in *Aristolebia*, though apparently without showing any regional distribution.

Further examination should reveal, whether the differences of colouration, namely the fading of elytral pattern in females of *A. mucronata* and *A. capitis*, is accidental or sexual.

The new records of *Aristolebia mucronata* in Australia again demonstrate the close relationship of the carabid faunas of Australia and New Guinea. As both *Aristolebia* species that occur in Australia are conspecific with New Guinean populations, the genus *Aristolebia* as a whole certainly is part of the northern faunal element that immigrated quite recently into Australia. This immigration may have been taken place in very recent times, probably even during the last glacial period when Australia was connected with New Guinea by a land bridge.

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